

Remarks

Claims 1, 3-26, 28-56, 69 and 70 are pending in the Application.

Claims 1, 3-26, 28-56, 69 and 70 stand rejected.

Claims 1 and 69 are amended herein.

Claim 6 is cancelled herein.

I. REJECTIONS UNDER OBVIOUSNESS-TYPE DOUBLE PATENTING

Examiner has rejected Claims 1, 3-26, 28-56, 69 and 70 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-206 of U.S. Patent No. 6,752,977, ("the '977 patent"). Office Action at 2.

Examiner contends that "[a]lthough the conflicting claims are not identical, they are not patentably distinct from each other because they differ only in the physical form of the halogen containing material. However heating the patented solution to high enough temperature of [sic] [to] vaporize some halide is an obvious expedient because this heating would speed the rate of reaction/purification." *Id.*

Applicant respectfully traverses these rejections. However, to facilitate prosecution of the Application, Applicant hereby responds with the enclosed Terminal Disclaimer to moot these rejections.

II. CLAIM REJECTIONS UNDER 35 U.S.C. § 103(a) OVER JANG

The Examiner has rejected Claims 1, 4, 6, 7, 9-11, 20-25, and 69 under 35 U.S.C. § 103(a) as being unpatentable over Jang *et al.*, U.S. Patent No. 6,331,209 ("*Jang*"). Office Action at 2.

Examiner contends that "*Jang* teaches in column 4 purifying nanotubes in plasma, which may be oxygen or halogen and repeating the process. The claims are open to further deposition between the oxidations required by *Jang* and choosing to use different gases taught is an obvious expedient as a matter of selection. Purifying SWNTs or MWNTs is an obvious expedient, as the reference teaches reaction of the non-nanotube material." *Id.*

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. See M.P.E.P. 706.02(j); see also *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Regarding Claims 1 and 69, these claims have been amended to include the elements of oxidation temperature and pressure by including the limitation that the oxidizing step be done "at a temperature between about 200°C and about 500°C and at a pressure between about 0.01 and about 100 atmospheres." No new matter has been added by virtue of this amendment. Support for the temperature range is found in Claim 6 and in the Application at 11, *ll.* 24-25. Support for the pressure range is found in the Application at 10, *ll.* 28-29. Claim 6 is cancelled herein.

These amendments to Claims 1 and 69 distinguish the present invention from the teachings of *Jang*. *Jang* teaches plasma etching in order to purify carbon nanotubes using conditions essentially the same as the plasma deposition conditions used to prepare the nanotubes. *Jang* at col. 4, *ll.* 22-25 ("The processing conditions for plasma etching are set to be essentially the same as in the plasma deposition mode...except for the kind of plasma source gas used."). The temperature of plasma deposition was cited in *Jang* as "600°C or more" (see *Jang*, col 3, *l.* 28), and "600 to 900°C" (see *Jang*, col 3, *l.* 56, and Claims 3 & 7). The pressure of plasma deposition was cited in *Jang* as "10 to 1000 mtorr." (see *Jang*, col. 3, *ll.* 57-58, and Claims 3 & 7) (Applicant notes that this pressure range is equivalent to 0.01 to 1 Torr or 1.3×10^{-5} to 1.3×10^{-3} atmospheres.) Thus, both the temperature range and pressure range of the oxidation step of the present invention (step (a) of Claims 1 and 69, as amended) are significantly different than the ranges taught or suggested by *Jang*.

Furthermore, the oxidation process of the present invention is fundamentally different from the plasma etching process of *Jang*. As is known in the art, the process of "plasma

etching” results when free radical and/or ionized species interact with the solid material being “etched”, as disclosed in *Jang* at col. 4, ll. 30-35. In the present invention, there is no plasma of ions or free radicals, and the oxidizing gas is in its neutral state at the conditions claimed. Thus, process of present invention is fundamentally distinct from that of *Jang*.

In summary, regarding Claims 1 and 69, there is no teaching or suggestion in *Jang* to use either the temperature range, pressure range, or both, as claimed in Claims 1 and 69, as amended. Furthermore, *Jang* does not teach or suggest a multi-step purification process, as claimed in both Claims 1 and 69. Furthermore, *Jang* does not teach or suggest all the claim limitations of Claims 1 and 69, as amended.

By virtue of the present amendments to Claims 1 and 69, Applicant respectfully contends that the present invention is not *prima facie* obviousness over *Jang*. Furthermore, Claims 4, 7, 9-11 and 20-25, which are dependent upon Claim 1, are also not *prima facie* obviousness over *Jang* for the same reasons that Claim 1 is not *prima facie* obvious.

As a result of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejections to Claim 1, as amended, Claims 4, 7, 9-11, 20-25, which are dependent on Claim 1, and Claim 69, as amended, under 35 U.S.C. § 103(a) as being unpatentable over *Jang*.

III. CONCLUSION

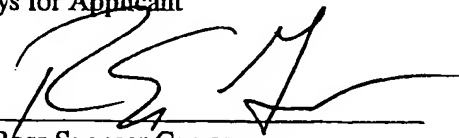
As a result of the foregoing, it is asserted by Applicant that the claims in the Application are now in a condition for allowance, and respectfully requests allowance of such claims. Applicant believes that no further fees are due. However, the Director is authorized to debit any amounts due by this paper to Deposit Account No. 23-2426 of Winstead Sechrest & Minick P.C. Applicant respectfully requests that Applicant's attorney be called at the below listed number should there be any questions relating to this matter.

Respectfully submitted,

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